originally filed at least at p. 3, lines. 29-30, p. 6, line 31, and p. 7, line 5. Moreover, as indicated by the examiner during the interview, one skilled in the art would recognize that the specification discloses a delay force significantly greater than under normal operating conditions.

Applicant respectfully traverses the grounds for rejection and requests reconsideration and withdrawal of the rejections of claims 1-22 and 24-28 in view of the amendments and the following remarks.

35 U.S.C. § 102 and 103 Rejections

Independent claims 1, 8, and 16, as amended, include features that are neither disclosed nor suggested by the cited references, either taken alone or in combination, namely as represented by claim 8:

> 8. (Twice Amended) A solenoid assembly, for use in activating a mechanism, wherein a force required to activate said mechanism varies between a minimum force and a maximum force in relation to the time since said mechanism was last activated, said solenoid assembly comprising:
>
> a solenoid having an armature extending therefrom, wherein said armature moves between a first position and a second position, in the first position the armature is spaced apart from and does not contact the mechanism and in the second position the armature is positioned to contact the mechanism, wherein when an electrical current is applied to said solenoid, said solenoid causes said armature to exert an armature force; and
>
> a *delay member for delaying the movement of said armature, wherein after the initiation of an electrical current to said solenoid said delay member delays the movement of said armature from said first position to said second position, with a force significantly greater than under normal operating conditions, until such time as said armature exhibits an armature force greater than said maximum force necessary to activate said mechanism.* (emphasis added)

Claim 8 is directed to a solenoid assembly for activating a mechanism such that mechanism activation times are consistent. In fact, the assembly may provide an order of magnitude increase in activation time consistency (p. 7, lines 1-9). The assembly includes a solenoid and a delay member. The delay member provides a significantly greater than normal

delay force that delays the movement of the armature from a first position to a second position until the armature exhibits an armature force greater than the maximum force necessary to activate the mechanism. Further, in the first position the armature is spaced apart from and does not contact the mechanism and in the second position the armature is positioned to contact the mechanism, thereby providing kinetic energy to activate the mechanism. This combination of delaying with a significantly greater than normal force and kinetic energy provides consistent mechanism activation times.

Bastle does not disclose or suggest a delay member for delaying the movement of the armature with a force significantly *greater* than under normal operating conditions, until such time as the armature exhibits an armature force greater than the maximum force necessary to activate the mechanism. In fact, Bastle minimizes any delay by employing a lost motion connection that allows almost immediate armature movement (Bastle at Figures 1 and 2). As shown in Figure 2 of Bastle, armature 32 almost immediately moves into coil 24 because the lost motion spring typically exerts a force significantly *less* than under normal operating conditions. This immediate armature motion allows armature 32 to quickly enter into coil 24, which generates an increased armature force (due to increased magnetic flux linkage), such that valve 18 may be unseated. Therefore, Bastle does not disclose or suggest a delay member for delaying the movement of the armature with a force significantly *greater* than under normal operating conditions, until such time as the armature exhibits an armature force greater than the maximum force necessary to activate the mechanism, as recited by the claims.

Grunert does not cure the deficiencies of Bastle. Grunert describes an electromagnetic circuit breaker having a trip delay device to avoid spurious trips. In Grunert, coil spring 90 absorbs armature forces up to a predetermined amount that is *based on the trip current* and under normal operating conditions, the solenoid is activated at the predetermined trip current level. Therefore, coil spring 90 of Grunert is sized according to the trip current and does not provide a force significantly *greater* than under normal operating conditions, as recited by the claims.

Nor does Harper cure the deficiencies of Bastle and Grunert. Harper discloses an inertial wheel for reducing nuisance trips of an electronic circuit breaker (similar to Grunert), but does not disclose or suggest a delay member for delaying the movement of the armature with a force significantly *greater* than under normal operating conditions, until such time as the armature exhibits an armature force greater than the maximum force necessary to activate the mechanism, as recited by the claims.

Accordingly, applicant submits that the cited references, either taken alone or in combination, do not disclose or suggest all of the features of independent claims 1, 8, or 16. Therefore, applicant respectfully submits that claims 1, 8, and 16 and all claims dependant therefrom, including claims 2-7, 9-15, 17-22 are patentable over the cited references. Accordingly, applicant respectfully requests reconsideration and withdrawal of the rejections of claims 1-22 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a).

Newly Added Claims

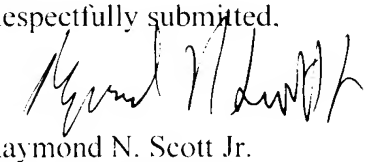
Newly added claims 24-28 are directed to the consistent activation times of the solenoid assembly.

CONCLUSION

For all the foregoing reasons, applicant respectfully submits that the present application is now in condition for allowance. Reconsideration of the office action and an early notice of allowance are respectfully requested. In the event that the examiner cannot allow the present application for any reason, the examiner is encouraged to contact the undersigned attorney, Raymond N. Scott Jr. at (215) 564-8951, to discuss resolution of any remaining issues.

Attached hereto is a marked-up version of the changes made to the application by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims:

Claims 1, 8, and 16 have been **amended** as follows and claims 24-28 have been **newly added** as follows.

1. (Twice Amended) A method of activating a mechanism, wherein a force required to activate the mechanism varies between a minimum force and a maximum force in relation to the time since the mechanism was last activated, the method comprising:

applying an electrical current to a solenoid having an armature extending therefrom, wherein the armature is movable between a first position and a second position and wherein the electrical current of the solenoid causes the armature to exert an armature force, in the first position the armature is spaced apart from and does not contact the mechanism and in the second position the armature contacts the mechanism; [and]

delaying, after applying the electrical current to the solenoid, the movement of the armature from the first position to the second position, with a force significantly greater than under normal operating conditions, until such time as the armature force is greater than the maximum force necessary to activate the mechanism; and

impacting the mechanism with the armature after the armature has kinetic energy.

8. (Twice Amended) A solenoid assembly, for use in activating a mechanism, wherein a force required to activate said mechanism varies between a minimum force and a maximum force in relation to the time since said mechanism was last activated, said solenoid assembly comprising:

a solenoid having an armature extending therefrom, wherein said armature moves between a first position and a second position, in the first position the armature is spaced apart from and does not contact the mechanism and in the second position the armature is positioned to

contact the mechanism, wherein when an electrical current is applied to said solenoid, said solenoid causes said armature to exert an armature force; and

a delay member for delaying the movement of said armature, wherein after the initiation of an electrical current to said solenoid said delay member delays the movement of said armature from said first position to said second position, with a force significantly greater than under normal operating conditions, until such time as said armature exhibits an armature force greater than said maximum force necessary to activate said mechanism.

16. (Twice Amended) A solenoid assembly, for use in activating a mechanism wherein a force required to activate said mechanism varies in relation to the time since said mechanism was last activated, said solenoid assembly comprising:

a solenoid having an armature extending therethrough, wherein said armature moves between a first position and an second position, in the first position the armature is spaced apart from and does not contact the mechanism and in the second position the armature is positioned to contact the mechanism, wherein when an electrical current is applied to said solenoid, said solenoid causes said armature to exert an armature force; and

a delay member for delaying the movement of said armature, wherein after the initiation of an electrical current to said solenoid said delay member delays the movement of said armature from said first position to said second position, with a force significantly greater than under normal operating conditions, until said armature exhibits a preselected armature force, necessary to activate said mechanism.

24. (Newly Added) The method of claim 1, wherein delaying the movement of the armature and impacting the mechanism with the armature provide mechanism activation times consistent to within one millisecond.

25. (Newly Added) The method of claim 1, wherein delaying the movement of the armature and impacting the mechanism with the armature provide mechanism activation times consistent to within two-tenths of a millisecond.

26. (Newly Added) The method of claim 1, wherein delaying the movement of the armature and impacting the mechanism with the armature provide mechanism activation substantially at a predefined time after the beginning of an ac power cycle.

27. (Newly Added) The method of claim 1, wherein delaying the movement of the armature and impacting the mechanism with the armature provide consistent mechanism activation within one millisecond of a predefined time after the beginning of an ac power cycle.

28. (Newly Added) The method of claim 1, wherein delaying the movement of the armature and impacting the mechanism with the armature provide consistent mechanism activation within about two-tenths of a millisecond of a predefined time after the beginning of an ac power cycle.